

Curriculum Vitae

Adrian L. Melott
Department of Physics and Astronomy
University of Kansas
Lawrence, Kansas 66045
(785) 864-3037
melott@ku.edu

Scientific Organizations (chronological by membership date)

American Physical Society

Elected Fellow 1996 “For groundbreaking studies of the origin and evolution of cosmic structure.”

Joseph A. Burton Forum Award 2002 “to recognize outstanding contributions to public understanding or resolution of issues involving the interface of physics and society”

Royal Astronomical Society (UK)

National Center for Science Education

American Association for the Advancement of Science, *Elected Fellow* 2007

“For distinguished contributions to cosmological large-scale structure, for organizing public support for teaching evolution, and for interdisciplinary research on astrophysical impacts on the biosphere.”

The Paleontological Society

Academic History

May 1994-

Professor of Physics and Astronomy

May 1990-1994

Associate Professor of Physics and Astronomy

August 1986-May 1990

Assistant Professor of Physics and Astronomy

University of Kansas

September 1983-August 1986

Enrico Fermi Postdoctoral Fellow

(An honorary independent research position)

University of Chicago

January 1982-August 1983

Postdoctoral Research Assistant

Department of Physics and Astronomy

University of Pittsburgh

April 1971-June 1978

Minister, Unitarian-Universalist Fellowship of Tampa, Florida

Visiting Positions

Fall 1999: Visiting Professor, Carnegie Mellon University

Fall 1992: Senior Visiting Fellow, Institute of Astronomy
Cambridge University, UK

Spring 1984: Visiting Researcher, Institute of Theoretical Physics
University of California at Santa Barbara

June 1983: Visiting Fellow, Dept. Astrophysics, Oxford University, UK

January-May 1983: IREX Fellow, Moscow State University, USSR

Education

Ph.D. Physics, 1981
University of Texas
Austin, Texas 78712

Dissertation Supervisor: Dennis W. Sciama
Title: Massive Neutrinos as Galactic Halo Material: Radiative Decay
Constraints and Gravitational Superclustering
(one semester spent at Dept. Astrophysics, Univ. of Oxford, UK)

M.A. Physics, 1977
University of South Florida
Tampa, Florida

M.Div. Seminary, 1971
Starr King School for Religious Leadership, Berkeley, California

B.S. Physics, 1968
Bethany College, West Virginia
(Student body president, 1967)

Other Prizes and Awards

Dudley Award, Dudley Observatory, "Topology of the Universe" (August 1987).

College of Liberal Arts and Sciences, KU--Steeple Award for Service to the Citizens of
Kansas, (May 2001)

Outstanding Educator Award, Pi Delta Kappa education fraternity (2003)

Barbara Schowen Undergraduate Research Mentor Award, KU (2013)

Refereed Publications

1. Le Chatelier's Principle (A.L. Melott) *Journal of Chemical Education* **45**, A519 (1968).
2. Quasar Lyman-alpha Absorbers: Are Precise Conclusions Possible? (A.L. Melott) *Astrophysical Journal* **241**, 889 (1980).
3. Neutrino-lifetime Constraints from Neutral Hydrogen in the Galactic Halo (A. Melott and D.W. Sciama) *Physical Review Letters* **46**, 1369 (1981).
4. Decaying Neutrinos as a Photoionization Source in Galactic Halos (D.W. Sciama and A. Melott) *Physical Review D* **25**, 2214 (1982).
5. Simulation of Gravitational Superclustering of Massive Neutrinos (A.L. Melott) *Physical Review Letters*, **48**, 894 (1982).
6. Massive Neutrinos in Large-Scale Gravitational Clustering (A.L. Melott) *Astrophysical Journal* **264**, 59 (1983).
7. The Formation of Galactic Halos in the Neutrino-adiabatic Theory (A.L. Melott) *Nature* **296**, 721 (1982).
8. Two-Dimensional Simulation of the Gravitational Superclustering of Collisionless Particles (A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **202**, 595 (1983).
9. The Bend in the Correlation Function: The Surviving Imprint of Adiabatic Perturbations? (A.L. Melott) *Astrophysical Journal Letters* **273**, L21 (1983).
10. Two-Dimensional Numerical Modelling of Formation of Superclusters from Collisionless Particles: Two-Point Correlation Functions (in Russian) (A.L. Melott) *Astronomicheskii Zhurnal* **61**, 1079 (1984). [*Soviet Astronomy* **28**, 631 (1984)].
11. Clustering Velocities in the Adiabatic Picture of Galaxy Formation (A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **205**, 637 (1983).
12. Direct Dissipationless Formation of Filaments in the Large-Scale Matter Distribution (A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **204**, 7P (1983).
13. The Two Point Correlation Function as an Indicator of Nonlinear Clustering (in Russian) (A.L. Melott) *Pis'ma v Astronomicheskii Zhurnal* **9**, 519 (1983). [*Soviet Astronomy Letters* **9**, 273 (1983)].
14. Three-Dimensional Simulation of Large Scale Structure in the Universe (J. Centrella and A. Melott) *Nature* **305**, 196 (1983), also reprinted in *Inflationary Cosmology* a collection edited by L.F. Abbott and S.Y. Pi (World Scientific: Singapore) (1986).
15. Pancakes and the Formation of Galaxies in a Neutrino-Dominated Universe (P. Shapiro, K. Struck-Marcell, and A. Melott) *Astrophysical Journal* **275**, 405 (1983).
16. Cluster Analysis of the Nonlinear Evolution of Large Scale Structure in an Axion/Gravitino/Photino Dominated Universe (A. Melott, J. Einasto, E. Saar, I. Suisalu, A. Klypin and S. Shandarin) *Physical Review Letters* **51**, 935 (1983).

17. Dwarf Satellite Galaxies and Radiative Decay of Elementary Particles Composing Galactic Halos, (in Russian) (A.L. Melott) *Astronomicheskii Zhurnal*, **61** 817 (1984). [*Soviet Astronomy* **28** 478].
18. Can a Neutrino-Dominated Universe be Rejected? (A.L. Melott) *Astrophysical Journal* **289**, 2 (1985).
19. Statistical Comparison of Galaxy Formation Models: The Bispectrum (J.N. Fry and A. Melott) *Astrophysical Journal* **292**, 395 (1985).
20. QSO Metal-Line Absorbers: The Key to Large-Scale Structure? (A.P.S. Crotts, A. Melott, D.G. York, and J.N. Fry) *Physics Letters* **155B**, 251 (1985).
21. Can "Warm" Particles Provide the Missing Mass in Dwarf Galaxies? (A. Melott and D.N. Schramm) *Astrophysical Journal* **298**, 1 (1985).
22. An Independent Test of Biased Galaxy Formation with Cold Particles: The Three Point Function (A. Melott and J.N. Fry) *Astrophysical Journal* **305**, 1 (1986).
23. On the Reliability of Virgo Infall in Estimating the Mass Density of the Universe (H. Bushouse, A. Melott, J. Centrella, and J. Gallagher) *Monthly Notices of the Royal Astronomical Society* **217**, 7P (1985).
24. The Sponge-Like Topology of the Large Scale Structure in the Universe (J.R. Gott, A. Melott, and M. Dickinson) *Astrophysical Journal* **306**, 341 (1986).
25. Comment on "Nonlinear Gravitational Clustering in Cosmology" , (A.L. Melott) *Physical Review Letters* **56**, 1992 (1986).
26. Deviation from Rubble Flow, Biased Galaxy Formation, and the Mass Density of the Universe (A.L. Melott) *Physical Review Letters* **57**, 257 (1986).
27. Voids and Velocities in Initially Gaussian Models for Large Scale Structures (A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **228**, 1001 (1987).
28. A Quantitative Approach to the Topology of Large Scale Structure (J.R. Gott, D. Weinberg, and A.L. Melott) *Astrophysical Journal* **319**, 1 (1987).
29. The Formation of Large-Scale Structure from Cosmic String Loops and Cold Dark Matter (A.L. Melott and R.J. Scherrer) *Nature* **328**, 691 (1987).
30. The Topology of Large Scale Structure I: Topology and the Random Phase Hypothesis (D. Weinberg, J.R. Gott, and A.L. Melott) *Astrophysical Journal* **321**, 2 (1987).
31. Comparisons of Large-Scale Structure Models with Gaussian Initial Conditions Against the Distribution of Abell Clusters (D. Batuski, A.L. Melott, and J. Burns) *Astrophysical Journal* **322**, 48 (1987).
32. The Topology of Large Scale Structure II: Nonlinear Evolution of Gaussian Models (A. Melott, D. H. Weinberg, and J. R. Gott III) *Astrophysical Journal* **328**, 50 (1988).

33. Has Dark Matter Decay Been Detected? (A. Melott, D.W. McKay, and J.P. Ralston) *Astrophysical Journal Letters* **324**, L43 (1988).
34. One Model for Magnetic Solar Neutrino Interactions, Cosmological Neutrino Decays, and New Particle Resonant Production by Neutrino Interactions from Cygnus X-3 (J.P. Ralston, D.W. McKay, and A.L. Melott) *Physics Letters* **202B**, 40 (1988).
35. A Case Study of Large Scale Structure in a 'Hot' Model Universe (J.N. Centrella, J.S. Gallagher III, A.L. Melott, and H.A. Bushouse) *Astrophysical Journal* **333**, 24 (1988).
36. Large-Scale Structure from Cosmic String Loops in a Baryon Dominated Universe (A.L. Melott and R.J. Scherrer) *Astrophysical Journal* **331**, 38 (1988).
37. The Topology of Superclusters: A Window on the Early Universe (A.L. Melott) *General Relativity and Gravitation* **21**, 495 (1989).
38. Void Statistics, Scaling, and the Origins of Large-Scale Structure (J.N. Fry, R. Giovanelli, M.P. Haynes, A.L. Melott, and R.J. Scherrer) *Astrophysical Journal* **340**, 11 (1989).
39. The Formation of Large-Scale Structure from Cosmic Strings and Massive Neutrinos (R.J. Scherrer, A.L. Melott, and E. Bertschinger) *Physical Review Letters* **62**, 379 (1989).
40. Topology of Large Scale Structure III: Observations (J .R. Gott, J. Miller, T .X. Thuan, S.E. Schneider, D.H. Weinberg, C. Gammie, K. Polk, M. Vogeley, S. Jeffrey, S.P. Bhavsar, A.L. Melott, R. Giovanelli, M.P. Haynes, R.B. Tully, and A.J.S. Hamilton) *Astrophysical Journal* **340**, 625 (1989).
41. The Area of Isodensity Contours and the Large Scale Structure of the Universe (B.S. Ryden, R.J. Scherrer, A.L. Melott, D.A. Craig, J.R. Gott, D.H. Weinberg, S.P. Bhavsar, and J.M. Miller) *Astrophysical Journal* **340**, 647 (1989).
42. Editor, Proceedings of the *Workshop on Topology of the Large-Scale Structure of the Universe*, (A.L. Melott) proceedings of the April, 1988 Lawrence, Kansas workshop, *Publications of the Astronomical Society of the Pacific* **100**, 1306-1404 (1988).
43. Gravitational Instability with High Resolution (A.L. Melott and S.F. Shandarin) *Astrophysical Journal* **343**, 26 (1989).
44. A Model for the Formation of the Local Group (P.J.E. Peebles, A.L. Melott, M.R. Holmes, and L.R. Jiang) *Astrophysical Journal* **345**, 108 (1989).
45. Topology of Large Scale Structure IV: Topology in Two Dimensions (A.L. Melott, A.P. Cohen, A.J.S. Hamilton, J.R. Gott III, and D.H. Weinberg) *Astrophysical Journal* **345**, 618 (1989).
46. The Topology of Large Scale Structure in the Universe (A.L. Melott) *Physics Reports* **193**, 1 (1990).

47. Gravity in Twisted Space (K. Farrar and A.L. Melott) *Computers in Physics* **4**, 185 (1990).
48. Comparison of Likely Candidate Models for Abell Cluster Structures Against the Observed Distribution (D.J. Batuski, A.L. Melott, R.J. Scherrer, and E. Bertschinger) *Astrophysical Journal* **367**, 393 (1991).
49. Minimal Spectrum of Long- Wave Perturbations: Is Linear Growth Correct only in the Nonlinear Regime? (S.F. Shandarin and A.L. Melott) *Astrophysical Journal* **364**, 396 (1990).
50. More Resolution Isn't Always Better Resolution (A.L. Melott) *Comments on Astrophysics* **15**, 1 (1990).
51. Generation of Large-Scale Cosmological Structures by Gravitational Clustering (A.L. Melott and S.F. Shandarin) *Nature* **346**, 633 (1990).
52. Gravitational Clustering in the Expanding Universe: Controlled High-Resolution Studies in Two Dimensions (J.F. Beacom, K.G. Dominik, A.L. Melott, S.P. Perkins, and S.F. Shandarin) *Astrophysical Journal* **372**, 351 (1991).
53. A Quantitative Measure of Phase Correlations in Density Fields (R.J. Scherrer, A.L. Melott, and S.F. Shandarin) *Astrophysical Journal* **377**, 29 (1991).
54. The Topology of Large Scale Structure: VI. Slices of the Universe (C. Park, J.R. Gott 111, A.L. Melott, and I.D. Karachentsev) *Astrophysical Journal* **387**, 1 (1992).
55. The Three-Point Function in an Ensemble of Numerical Simulations (J.N. Fry and A.L. Melott) *Astrophysical Journal* **393**, 431 (1992).
56. The Void Spectrum in Two-Dimensional Numerical Simulations of Gravitational Clustering (G.A.M. Kauffmann and A.L. Melott) *Astrophysical Journal* **393**, 415 (1992).
57. Coherent Structures in the Universe and the Adhesion Model (L. Kofman, D. Pogosyan, S.F. Shandarin, and A.L. Melott) *Astrophysical Journal* **393**, 437 (1992).
58. Can Neutrino Decay Driven Mock Gravity Save Hot Dark Matter? (R.J. Splinter and A.L. Melott) *Astrophysical Journal* **394**, 7 (1992).
59. Tests of Smoothing Methods for Topological Study of Galaxy Redshift Surveys (A.L. Melott and K.G. Dominik) *Astrophysical Journal Supplement* **86**, 1 (1993).
60. Filamentary and Hierarchical Pictures: Kinetic Energy Criterion (A.A. Klypin and A.L. Melott) *Astrophysical Journal* **399**, 397 (1992).
61. Does Faint Galaxy Clustering Contradict Gravitational Instability? (A.L. Melott) *Astrophysical Journal Letters* **393**, 145 (1992).
62. Testing Approximations for Non-Linear Gravitational Clustering (P. Coles, A.L. Melott, and S.F. Shandarin) *Monthly Notices of the Royal Astronomical Society* **260**, 765 (1993).

63. Controlled Experiments in Cosmological Gravitational Clustering (A.L. Melott and S.F. Shandarin) *Astrophysical Journal* **410**, 469 (1993).
64. Galaxy Clustering: Why Peebles and Zel'dovich were Both Right (A.L. Melott) *Comments on Astrophysics* **16**, 321 (1993).
65. The Three-point Function in an Ensemble of Three Dimensional Simulations (J .N . Fry, A.L. Melott, and S.F. Shandarin) *Astrophysical Journal* **412**, 504 (1993).
66. Improving the Reconstruction of the Velocity Potential and Primordial Density Fluctuations by Choice of Smoothing Windows (A.L. Melott) *Astrophysical Journal Letters* **414**, 173 (1993).
67. Higher Order Moments of the Matter Distribution in Scale-Free Cosmological Simulations with Large Dynamic Range (F. Lucchin, S. Matarrese, A.L. Melott, and L. Moscardini) *Astrophysical Journal* **422**, 430 (1994).
68. Optimizing the Zel'dovich Approximation (A.L. Melott, T.F. Pellman, and S.F. Shandarin) *Monthly Notices of the Royal Astronomical Society* **269**, 626 (1994).
69. Decaying Neutrinos in Galaxy Clusters (A.L. Melott, R.J. Splinter, M. Persic, and P. Salucci) *Astrophysical Journal* **421**, 16 (1994).
70. Back into the Future with Ya.B. Zel'dovich (A.L. Melott) *Comments on Astrophysics* **17**, 145 (1993).
71. Testing the Frozen-Flow Approximation (A.L. Melott, F. Lucchin, S. Matarrese, and L. Moscardini) *Monthly Notices of the Royal Astronomical Society* **268**, 69 (1994).
72. A Test of the Adhesion Approximation (A.L. Melott, S.F. Shandarin, and D.H. Weinberg) *Astrophysical Journal* **428**, 28 (1994).
73. Testing Higher Order Lagrangian Perturbation Theory Against Numerical Simulations-1. Pancake Models (T. Buchert, A.L. Melott, and A.G. Weiss) *Astronomy and Astrophysics* **288**, 349 (1994)
74. Comparison of Dynamical Approximation Schemes for Gravitational Clustering (A.L. Melott) *Astrophysical Journal Letters* **426**, 119 (1994)
75. Testing Higher-Order Lagrangian Perturbation Theory Against Numerical Solutions 2. Hierarchical Models (A.L. Melott, T. Buchert, and A.G. Weiss) *Astronomy and Astrophysics* **294**, 345 (1995).
76. The Shape of the First Collapsed Objects (S.F. Shandarin, A.L. Melott, K. McDavitt, J.L. Pauls, and J. Tinker) *Physical Review Letters* **75**, 7 (1995).
77. Biased Power Spectrum and Bispectrum for an Ensemble of Three- Dimensional Scale Free Numerical Simulations (J.N. Fry, A.L. Melott, and S.F. Shandarin) *Monthly Notices of the Royal Astronomical Society* **274**, 745 (1995).

78. Hierarchical Pancaking: Why the Zel'dovich Approximation Describes Coherent Large-Scale Structure in N-Body Simulations (J.L. Pauls and A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **274**, 99 (1995).
79. Gravitational instability in the strongly nonlinear regime: A study of various approximations (B.S. Sathyaprakash, V. Sahni, D. Munshi, D. Pogosyan, and A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **275**, 463 (1995).
80. Evolution of the Potential in Cosmological Gravitational Clustering (A.L. Melott, B.S. Sathyaprakash, and V. Sahni) *Astrophysical Journal* **456**, 65 (1996).
81. Voids in Real Space and Redshift Space (B.S. Ryden and A.L. Melott) *Astrophysical Journal* **470**, 160 (1996).
82. A Test of the Particle Paradigm in N-Body Simulations (B. Kuhlman, A.L. Melott, and S.F. Shandarin) *Astrophysical Journal Letters* **470**, L41 (1996).
83. Temporal Optimization of Lagrangian Perturbation Schemes (G. Karakatsanis, T. Buchert, and A.L. Melott) *Astronomy and Astrophysics* **326**, 873 (1997).
84. The Ellipticity and Orientation of Clusters of Galaxies in N-body Experiments (R.J. Splinter, A.L. Melott, A.M. Linn, C. Buck, and J. Tinker) *Astrophysical Journal* **479**, 632 (1997).
85. The Bulls-Eye Effect: Are Galaxy Walls Observationally Enhanced? (E.A. Praton, A.L. Melott, and M.Q. McKee) *Astrophysical Journal Letters* **479**, L15 (1997).
86. Demonstrating Discreteness and Collision Error in Cosmological N-body Simulations of Dark Matter Gravitational Clustering (A.L. Melott, S.F. Shandarin, R.J. Splinter, and Y. Suto) *Astrophysical Journal Letters* **479**, L79 (1997).
87. Testing Tree-Level Perturbation Theory for Large-Scale Structure with the Local Lagrangian Approximation (Z.A.M. Protogeris, A.L. Melott, and R.J. Scherrer) *Monthly Notices of the Royal Astronomical Society* **290**, 367 (1997).
88. Non-linear Evolution of the Bispectrum of Cosmological Perturbations (R. Scoccimarro, S. Colombi, J.N. Fry, J.A. Frieman, E. Hivon, and A.L. Melott) *Astrophysical Journal* **496**, 586 (1998).
89. Fundamental Discreteness Limitations of Cosmological N-Body Clustering Simulations (R.J. Splinter, A.L. Melott, S.F. Shandarin, and Y. Suto) *Astrophysical Journal* **497**, 38 (1998).
90. The Bull's-Eye Effect as a Probe of Ω (A.L. Melott, P. Coles, H.A. Feldman, and B. Wilhite) *Astrophysical Journal Letters* **496**, L85 (1998).
91. Non-local Scaling in Two-Dimensional Gravitational Clustering (D. Munshi, L. Chiang, P. Coles, and A.L. Melott) *Monthly Notices of the Royal Astronomical Society* **293**, L68 (1998).

92. Clustering Properties of Low-Redshift QSO Absorption Systems Towards the Galactic Poles (D. Vanden Berk, J. Lauroesch, a. Stoughton, A. Szalay, D. Koo, A. Crofts, A. Blades, A. Melott, B. Boyle, T. Broadhurst, and D. York) *Astrophysical Journal Supplement*, **122**, 355 (1999).
93. Scaling in Gravitational Clustering, 2D and 3D Dynamics (D. Munshi, F. Bernardeau, A.L. Melott, and R. Schaeffer) *Monthly Notices of the Royal Astronomical Society*, **303**, 433 (1999).
94. Cluster Winds Blow along Supercluster Axes (D.I. Novikov, A.L. Melott, B.C. Wilhite, M. Kaufman, J.O. Burns, C.J. Miller, and D.J. Batuski) *Monthly Notices of the Royal Astronomical Society*, **304**, L5 (1999).
95. From Snakes to Stars, Statistics of Collapsed Objects I: Lower-Order Clustering Properties of Collapsed Objects (D. Munshi, P. Coles, and A.L. Melott) *Monthly Notices of the Royal Astronomical Society*, **307**, 387 (1999).
96. From Snakes to Stars, Statistics of Collapsed Objects II: Testing a Generic Scaling Ansatz for Hierarchical Clustering (D. Munshi, P. Coles, and A.L. Melott) *Monthly Notices of the Royal Astronomical Society*, **310**, 892 (1999).
97. Generalised Cumulant Correlators and Hierarchical Clustering (D. Munshi, A.L. Melott, and P. Coles), *Monthly Notices of the Royal Astronomical Society*, **311**, 149 (2000).
98. Massive Cooling Flow Clusters Inhabit Crowded Environments (C. Loken, A.L. Melott, and C.J. Miller) *Astrophysical Journal Letters* **520**, L5 (1999).
99. Bias and Hierarchical Clustering (P. Coles, A.L. Melott, and D. Munshi), *Astrophysical Journal Letters*, **521**, L5 (1999).
100. Disentangling the Cosmic Web I: Morphology of Isodensity Contours J. Schmalzing, T. Buchert, A.L. Melott, V. Sahni, B.S. Sathyaprakash, and S.F. Shandarin *Astrophysical Journal*, **526**, 568 (1999).
101. Environmental Dependence of the Fundamental Plane of Galaxy Clusters (Christopher J. Miller, Adrian L. Melott, and Patrick Gorman) *Astrophysical Journal Letters*, **526**, L61 (1999).
102. Einstein Galaxy Cluster Alignments Revisited (Scott W. Chambers, Adrian L. Melott, and Christopher J. Miller) *Astrophysical Journal* **544**, 104 (2000).
103. The Size and Shape of Voids in Three-Dimensional Galaxy Surveys (Jason D. Schmidt, Barbara S. Ryden, and Adrian L. Melott) *Astrophysical Journal* **546**, 609 (2001).
104. Recent Dynamical Relaxation of Galaxy Clusters: Evidence for a Low- Ω_m Cosmology (A.L. Melott, S. W. Chambers and C.J. Miller) *Astrophysical Journal Letters* **559**, L75 (2001).

105. The Nearest Neighbor Alignment of Cluster X-ray Isophotes (S. Will Chambers, Adrian L. Melott, and Christopher J. Miller) *Astrophysical Journal* **565**, 849 (2002).
106. Optimal Moments for the Analysis of Peculiar Velocity Surveys (R. Watkins, H.A. Feldman, S.W. Chambers, P. Gorman, and A.L. Melott) *Astrophysical Journal* **564**, 534 (2002).
107. Universal Behavior of Phase Correlations in Non-linear Gravitational Clustering (P. Watts, P. Coles, and A.L. Melott) *Astrophysical Journal Letters*, **589**, L61 (2003).
108. Eccentricity Evolution in Simulated Galaxy Clusters (S.N. Floor, A.L. Melott, C.J. Miller, and G.L. Bryan) *Astrophysical Journal*, **591**, 741 (2003).
109. Optimal Moments for the Analysis of Peculiar Velocity Surveys II: Testing (H.A. Feldman, R. Watkins, A.L. Melott, and S.W. Chambers) *Astrophysical Journal*, **599**, 820 (2003).
110. Quantifying the Bull's Eye Effect (B.C. Thomas, A.L. Melott, H.A. Feldman, and S.F. Shandarin) *Astrophysical Journal*, **608**, 28 (2004).
111. Numerical Study of the Cosmological Velocity Field as a Function of Density (A. Dominguez and A.L. Melott) *Astronomy and Astrophysics*, **419**, 425 (2004).
112. Simulated Versus Observed Cluster Eccentricity Evolution (S.N. Floor, A.L. Melott, and P.M. Motl) *Astrophysical Journal*, **611**, 153 (2004).
113. Did a gamma-ray burst initiate the late Ordovician mass extinction? (A.L. Melott, B.S. Lieberman, C.M. Laird, L.D. Martin, M.V. Medvedev, B.C. Thomas, J.K. Cannizzo, N. Gehrels, and C.H. Jackman) *International Journal of Astrobiology*, **3**, 55 (2004).
114. Terrestrial Ozone Depletion Due to a Milky Way Gamma-Ray Burst (B.C. Thomas, C. Jackman, A. Melott, C. Laird, R. Stolarski, N. Gehrels, J. Cannizzo, and D.P. Hogan) *Astrophysical Journal Letters*, **622**, L153 (2005).
115. Climatic and Biogeochemical Effects of a Galactic Gamma-Ray Burst (Adrian L. Melott, Brian C. Thomas, Daniel P. Hogan, Larissa M. Ejzak, and Charles H. Jackman) *Geophysical Research Letters* **32**, L14808 doi:10.1029/2005GL023073 (2005).
116. Gamma-ray bursts and the Earth: Exploration of Atmospheric, Biological, Climatic, and Biogeochemical Effects (B.C. Thomas, A.L. Melott, C.H. Jackman, C.M. Laird, M.V. Medvedev, R.S. Stolarski, N. Gehrels, J.K. Cannizzo, D.P. Hogan, and L.M. Ejzak) *Astrophysical Journal* **634**, 509-533 (2005).
117. Gamma-ray bursts and terrestrial planetary atmospheres (B.C. Thomas and A.L. Melott) *New Journal of Physics* **8**, 120 doi:10.1088/1367-2630/8/7/120 (2006).
118. Terrestrial Consequences of Spectral and Temporal Variability in Ionizing Photon Events (L.M. Ejzak, A.L. Melott, M.V. Medvedev, and B.C. Thomas) *Astrophysical Journal*, **654**, 373 (2007).

119. Do Extragalactic Cosmic Rays Induce Cycles in Fossil Diversity? (M.V. Medvedev and A.L. Melott), *Astrophysical Journal*, **664**, 879 (2007).
120. Modeling atmospheric effects of the September 1859 Solar Flare (B.C. Thomas, C.H. Jackman, and A.L. Melott) *Geophysical Research Letters*, **34**, L06810, doi:10.1029/2006GL029174, (2007)
121. Considering the Case for Biodiversity Cycles: Reexamining the Evidence for Periodicity in the Fossil Record (B.S. Lieberman and A.L. Melott), *PLoS ONE*, **2**(8): e759. doi:10.1371/journal.pone.0000759, (2007)
122. Bone Cancer Rates in Dinosaurs Compared with Modern Vertebrates (L.C. Natarajan, A.L. Melott, B.M. Rothschild, and L.D. Martin), *Transactions of the Kansas Academy of Science*, **110**, 155-158, (2007)
123. Superluminous supernovae: No threat from η Carinae (B.C. Thomas, A.L. Melott, B.D. Fields, and B.J. Anthony-Twarog), *Astrobiology* **8**(1), 9-16 (2008) doi:10.1089/ast.2007.0181.
124. The Habitable Galaxy: Variation in Space and Time (Adrian Melott) *Astrobiology* **8**(2): 392-393 (2008) doi:10.1089/ast.2008.1245
125. Atmospheric Consequences of Cosmic Ray Variability in the Extragalactic Shock Model (A.L. Melott, A.J. Krejci, B.C. Thomas, M.V. Medvedev, M.J. Murray, and G.W. Wilson), (*Journal of Geophysical Research—Planets*), *J. Geophys. Res.* **113**, E10007, doi:10.1029/2008JE003206 (2008)
126. Long-term cycles in the history of life: Periodic biodiversity in the Paleobiology Database (A.L. Melott) *PLoS ONE*, **3**(12): e4044. doi:10.1371/journal.pone.0004044 (2008).
127. Late Ordovician geographic patterns of extinction compared with simulations of astrophysical ionizing radiation damage (A.L. Melott and B.C. Thomas), *Paleobiology* **35**, 311-320 (2009). doi:10.1666/0094-8373-35.3.311
128. Testing the link between terrestrial climate change and Galactic spiral arm transit (A.C. Overholt, A.L. Melott, and M.K. Pohl), *Astrophysical Journal Letters* **705**, L101-L103 (2009); erratum *ApJ*, 751, L45 (2012).
129. Cometary airbursts and atmospheric chemistry: Tunguska and a candidate Younger Dryas event. (A.L. Melott, B.C. Thomas, G.A. Dreschhoff, and C.K. Johnson) *Geology*, **38**, 355-358 (2010) doi: 10.1130/G30508.1 See also "Research Focus" April 2010 issue *Geology*: <http://geology.geoscienceworld.org/cgi/content/full/38/4/383>

130. Lookup tables to compute high energy cosmic ray induced atmospheric ionization and changes in atmospheric chemistry. (Dimitra Atri, Adrian L. Melott, and Brian C. Thomas), *Journal of Cosmology and Astroparticle Physics JCAP05(2010)008* doi: 10.1088/1475-7516/2010/05/008 (2010).
131. Atmospheric Consequences of Cosmic Ray Variability in the Extragalactic Shock Model: II Revised ionization levels and their consequences (Adrian L. Melott, Dimitra Atri, Brian C. Thomas, Mikhail V. Medvedev, Graham W. Wilson, and Michael J. Murray) *Journal of Geophysical Research—Planets* **115**, E08002 (2010) doi:10.1029/2010JE003591
132. Nemesis Reconsidered (Adrian L. Melott and Richard K. Bambach) *Monthly Notices of the Royal Astronomical Society Letters* **407**, L99-L102 (2010). doi:10.1111/j.1745-3933.2010.00913.x
133. A ubiquitous ~62-Myr periodic fluctuation superimposed on general trends in fossil biodiversity. I. Documentation (Adrian L. Melott and Richard K. Bambach), *Paleobiology*, **37**, 92-112 (2011)
134. A ubiquitous ~62 Myr periodic fluctuation superimposed on general trends in fossil biodiversity: II, Evolutionary dynamics associated with periodic fluctuation in marine diversity. (Adrian L. Melott and Richard K. Bambach) *Paleobiology* **37**, 383-408 (2011)
135. Astrophysical Ionizing Radiation and the Earth: A Brief Review and Census of Intermittent Intense Sources (Adrian L. Melott and Brian C. Thomas) *Astrobiology* **11**, 343-361 (2011) doi:10.1089/ast.2010.0603.
136. Modeling high-energy cosmic ray induced terrestrial muon flux: A lookup table (Dimitra Atri and Adrian L. Melott), *Radiation Physics and Chemistry*, **80**, 701-703 (2011) <http://dx.doi.org/10.1016/j.radphyschem.2011.02.020>
137. Biological implications of high-energy cosmic ray induced muon flux in the extragalactic shock model (D. Atri and A.L. Melott) *Geophysical Research Letters* **38**, L19203. doi: 10.1029/2011GL049027 (2011)
138. A ~60 Myr periodicity is common to marine-⁸⁷Sr/⁸⁶Sr, fossil biodiversity, and large-scale sedimentation: what does the periodicity reflect? (Adrian L. Melott, Richard K. Bambach, Kenni D. Petersen, and John M. McArthur) *Journal of Geology*, **120**, 217-226 (2012) DOI: 10.1086/663877
139. "Whilst this Planet Has Gone Cycling On: What Role for Periodic Astronomical Phenomena in Large Scale Patterns in the History of Life?" (B.S. Lieberman and A.L. Melott) in J. Talent, editor, *International Year of Planet Earth, (IYPE) biosphere volume: Earth and Life: Global Biodiversity, Extinction Intervals and Biogeographic Perturbations through Time*, Springer Legacy Series, Berlin. pp 37-50. (2012) <http://arxiv.org/abs/0901.3173>

140. Declining Volatility, a General Property of Disparate Systems: from Fossils, to Stocks, to the Stars (Bruce S. Lieberman and Adrian L. Melott) *Palaeontology* **56**, 1297-1304. DOI: 10.1111/pala.12017 (2013).
141. Causes of an AD 774-775 ¹⁴C increase. (A.L. Melott and B.C. Thomas) *Nature*, **491**, E1. DOI 10.1038/nature11695 (2012).
142. Terrestrial effects due to possible astrophysical sources of an AD 774-775 increase in ¹⁴C production (B.C. Thomas, A.L. Melott, K.R. Arkenberg, and B.R. Snyder II) *Geophysical Research Letters*, **40**, 1237-1240. DOI: 10.1002/grl.50222 (2013). (Selected as a "Research Spotlight" by the American Geophysical Union, noted in the journal and in their newsletter Eos.)
143. Modeling cosmic ray proton induced terrestrial neutron flux: A lookup table (A.C. Overholt, A.L. Melott, and D. Atri) *Journal of Geophysical Research - Space Physics* **118**, 2765–2770, (2013) DOI: 10.1002/jgra.50377
144. Cosmogenic nuclide enhancement via deposition from long-period comets as a test of the Younger Dryas impact hypothesis. (A.C. Overholt and A.L. Melott) *Earth and Planetary Science Letters* **377-378**, 55-61. (2013) DOI: 10.1016/j.epsl.2013.07.029
145. Do Periodicities In Extinction-With Possible Astronomical Connections-- Survive a Revision of the Geological Timescale? (A.L. Melott and R.K. Bambach) *Astrophysical Journal* **773**, 6-10 (2013). doi:10.1088/0004-637X/773/1/6
146. Biological radiation dose from secondary particles in a Milky Way gamma ray burst. (Dimitra Atri, Adrian L. Melott, and Andrew Karam) *International Journal of Astrobiology* (2013). doi:10.1017/S1473550413000414
147. Cosmic Rays and Terrestrial Life: a Brief Review. (D. Atri and A.L. Melott) *Astroparticle Physics*, **53**, 186-190 (2014). One of the top five most downloaded papers for this journal in 2014. <http://dx.doi.org/10.1016/j.astropartphys.2013.03.001>
148. Analysis of periodicity of extinction using the 2012 geological time scale. (A.L. Melott and R.K. Bambach) *Paleobiology* **40**, 177-196 (2014). This was designated as the Featured Article (selected by the editors for its unusual significance) for the spring 2014 issue, and the only one so selected in 2014.
149. Low time resolution analysis of polar ice cores cannot detect impulsive nitrate events. (D.F. Smart, M.A. Shea, Adrian L. Melott, and Claude M. Laird) *Journal of Geophysical Research: Space Physics* **119**, 9430-9440. doi:10.1002/2014JA020378 (2014).
150. Has the Earth been exposed to numerous supernovae within the last 300 kyr? (A.L. Melott, I.G. Usoskin, G.A. Kovaltsov, and C.M. Laird) *International Journal of Astrobiology* **14**, 375-378. doi:10.1017/S1473550414000512 (2015).

151. A link between solar events and congenital malformations: Is ionizing radiation enough to explain it? (Andrew Overholt, Adrian Melott and Dimitra Atri) *Journal of Geophysical Research: Space Physics*, 120.3, 1537-1542.
DOI: 10.1002/2014JA020681 (2015). This was one of three papers among all journals in geophysics selected by the editor of *Space Weather* to be highlighted for the first quarter of 2015.
152. Nitrate Deposition following an Astrophysical Ionizing Radiation Event (Ben Neuenswander and Adrian Melott) *Advances in Space Research* 55, 2946-2949 (2015).
<http://dx.doi.org/10.1016/j.asr.2015.03.017>
153. Comment on: "Direct evidence of ancient shock metamorphism at the site of the 1908 Tunguska event" by Vannucchi et al. (Earth Planet. Sci. Lett. 409 (2015) 168-174) (A.L. Melott and A.C. Overholt) *Earth and Planetary Science Letters* 415, 213-214. Doi: 10.1016/j.epsl.2015.01.021. (2015)
154. Atmospheric ionization by high fluence, hard spectrum solar proton events and their probable appearance in the ice core archive. (A.L. Melott, B.C. Thomas, C.M. Laird, B. Neuenswander, and D. Atri), *Journal of Geophysical Research: Atmospheres* 121, 3017–3033 (2016). DOI: 10.1002/2015JD024064
155. Supernovae in the Neighbourhood. (A. L. Melott) *Nature* 532, 40-41 (2016).
156. A possible role for stochastic astrophysical ionizing radiation events in the systematic disparity between molecular and fossil dates (A.L. Melott) *Astrobiology* 17, 87-90 (2017). doi:10.1089/ast.2016.1527
157. Terrestrial Effects of Nearby Supernovae in the Early Pleistocene (B.C. Thomas, E. E. Engler, M. Kachelrieß, A. L. Melott, A. C. Overholt, and D.V. Semikoz) *Astrophysical Journal Letters*, 826, L3 (2016). <http://dx.doi.org/10.3847/2041-8205/826/1/L3>
158. Does the Planetary Dynamo Go Cycling On? Re-examining the Evidence for Cycles in Magnetic Reversal Rate. (A.L. Melott, A. Pivarunas, J.G. Meert, and B.S. Lieberman). *International Journal of Astrobiology* 17, 44-50 (2018)
<https://doi.org/10.1017/S1473550417000040>
159. A Supernova at 50 Pc: Effects on the Earth's Atmosphere and Biota (A.L. Melott, B. C. Thomas, M. Kachelrieß, D.V. Semikoz, and A. C. Overholt) *Astrophysical Journal*, 840, 105 (2017) <https://doi.org/10.3847/1538-4357/aa6c57>
160. Periodicity in the extinction rate and possible astronomical causes. (A.L. Melott and R.K. Bambach) *Palaeontology* 60: 911–920 (2017) DOI: 10.1111/pala.12322
161. Terrestrial effects of moderately nearby supernovae. (A.L. Melott and B.C. Thomas). *Lethaia* 51, 325-329 (2018) <https://doi.org/10.1111/let.12256>

162. Extraordinary biomass-burning episode and impact winter triggered by the Younger Dryas cosmic impact ~12,800 years ago; Part 1: Ice cores and glaciers (Wendy S. Wolbach, Joanne P. Ballard, Paul A. Mayewski, Victor Adedeji, Ted E. Bunch, Richard B. Firestone, Timothy A. French, George A. Howard, Isabel Israde-Alcántara, John R. Johnson, David Kimbel, Charles R. Kinzie, Andrei Kurbatov, Gunther K. Kletetschka, Malcolm A. LeCompte, William C. Mahaney, Adrian L. Melott, Abigail Maiorana-Boutillier, Siddhartha Mitra, Christopher R. Moore, William M. Napier, Jennifer Parlier, Kenneth B. Tankersley, Brian C. Thomas, James H. Wittke, Allen West, James P. Kennett) *Journal of Geology* 126, 165-184 (2018) <https://doi.org/10.1086/695703>

163. Extraordinary biomass-burning episode and impact winter triggered by the Younger Dryas cosmic impact ~12,800 years ago; Part 2: Lake, marine, and terrestrial sediments (Wendy S. Wolbach, Joanne P. Ballard, Paul A. Mayewski, Andrew C. Parnell, Niamh Cahill, Victor Adedeji, Ted E. Bunch, Gabriela Domínguez-Vázquez, Jon M. Erlandson, Richard B. Firestone, Timothy A. French, George Howard, Isabel Israde-Alcántara, John R. Johnson, David Kimbel, Charles R. Kinzie, Andrei Kurbatov, Günther K. Kletetschka, Malcolm A. LeCompte, William C. Mahaney, Adrian L. Melott, Siddhartha Mitra, Abigail Maiorana-Boutillier, Christopher R. Moore, William M. Napier, Jennifer Parlier, Kenneth B. Tankersley, Brian C. Thomas, James H. Wittke, Allen West, James P. Kennett) *Journal of Geology* 126, 185-205 (2018) <https://doi.org/10.1086/695704>

164. Possible linkage between supernovae, increased terrestrial lightning, and wildfire activity in the Late Miocene and Early Pleistocene. (G. Feulner, A. L. Melott, B. C. Thomas, K. Thonicke, and W. von Bloh) submitted (2017)

165. Muon Radiation Dose and Marine Megafaunal Extinction at the end-Pliocene Supernova. (A.L. Melott, F. Marinho, and L. Paulucci) submitted (2018)

Non-refereed Publications, Media Accounts, and Outreach (Other)

1. The Invisible Universe (A.L. Melott) *Astronomy* **9**, 66 (1981).
2. Cosmology on a Computer (A.L. Melott) *Astronomy* **11**, #6, 66, and #7, 66 (1983).
3. Some Comments on Gravitational Clustering Simulations of Ino Universes (A.L. Melott) in *Innerspace/Outerspace* (E. W. Kolb et al., eds), University of Chicago Press (1986).
4. The Large-Scale Structure of the Universe: Three-Dimensional Numerical Models (J. Centrella and A. Melott) in *Numerical Astrophysics: a Meeting in Honor of Jim Wilson*. (J. Centrella et al., eds.), Jones and Bartlett, Boston (1985).
5. Use of Supercomputers in Astrophysics (A.L. Melott) *Bulletin of the American Physical Society*, **30**, 739 (1985).
6. Popularized discussions of my research are contained in these periodicals: National

Geographic (June 1983), *Sky and Telescope*, (June 1983), *Energy and Technology Review* (March 1983), *Physics Today* (October 1983), *Mosaic* **15**, #2, 2 (1984), and *Scientific American* (July 1986).

7. Virgo Infall and the Mass Density of the Universe (A.L. Melott) in *Galaxy Distances and Deviations from Universal Expansion*, B.F. Madore and R.B. Tully, eds. (Dordrecht:Reidel) (1986).

8. Simulations of Large-Scale Structure Compared to Abell Cluster Distribution (D. Batuski, A.L. Melott, and J. Burns) in *Observational Cosmology*, proceedings of IAU Symposium 124, A. Hewitt, G. Burbidge, and L.Z. Fang, eds. (Dordrecht:Reidel) (1987); there is a substantially similar report in *Proceedings of IAU Symposium 130*, the Hungary meeting on Large-Scale Structure of the Universe (J. Audouze and A. Szalay, eds.) (1987).

9. More popularized discussions are to be found in the *New York Times* (Nov. 9, 1986, p.1), *Sky and Telescope* (December 1986), *Chronicle of Higher Education* (Jan. 14, 1987), *Explore* (Spring 1987), *Physics Today* (October 1987), *The World and I* (November 1987).

10. Topology of the Universe: Motivation for the Study of Large-Scale Structure (A.L. Melott) in *Proceedings of the XIIIth Texas Symposium on Relativistic Astrophysics* (M. Ulmer, ed.), (1987).

11. Topology of the Universe (A.L. Melott) *Bulletin of the American Physical Society* **32**, 1012 (1987).

12. Re-creating the Universe (A.L. Melott) *Astronomy* **16**, #5, 42 (1988).

13. More popularized discussions are to be found in *Science News* (Feb. 6, 1988), *Computers and the Cosmos* (Time-Life Books, 1988), *Nature* **338**, 541 (April 13, 1989), *Astronomy* **17**, #6, 14 (1989), *Discover* (September 1989), *Chronicle of Higher Education* (Jan. 3, 1990).

14. A Simple Model for the Formation of the Local Group of Galaxies (A.L. Melott) in *The Epoch of Galaxy Formation*, proceedings of the Durham, England NATO Advanced Research Workshop, (Kluwer:Dordrecht) 1988 (C. Frenk et. al, eds).

15. Numerical Simulations of the Formation of Large Scale Structure in the Universe (A.L. Melott and J.F. Beacom) in *Science at the John von Neumann Supercomputer Center* (G. Cook, ed.) Consortium for Scientific Computing, 1988.

16. Topology of the Universe (A.L. Melott) *Abstracts of papers presented to the American Mathematical Society* **9**, 390 (1988).

17. Glowing Hot Dark Matter with or without Strings Attached in *Dark Matter* (J. Audouze and J. Than Thanh Van, Eds.), Editions Frontieres, Cedex France (1988).

18. Numerical Simulations of the Formation of Large Scale Structure in Cosmic-String

Universes (A.L. Melott and J.F. Beacom) in *Science at the John von Neumann Supercomputer Center* (G. Cook, ed.) Consortium for Scientific Computing, 1989 (See also cover illustration this issue).

19. Radiative Decay of the Tau Neutrino? (A.L. Melott) in '88 *Electroweak Interactions and Unified Theories* (J. Than Thanh Van, ed.) Editions Frontieres, France 1988.

20. More popularized discussions are to be found in *Science News* (Cover photo March 24, 1990)

21. The New Discussion of a Neutrino Mass and Issues in the Formation of Large-Scale Structure (A.L. Melott) in *After the First Three Minutes* (S. Holt, C. Bennett, and V. Thimble, eds), American Institute of Physics (1991).

22. Is There Any Observational Evidence for Non-Gaussian Primordial Density Fluctuations? (A.L. Melott) in *Observational Tests of Cosmological Inflation*, proceedings of the 1990 Durham, U.K. NATO Advanced Research Workshop, (T. Shanks et. al, editors) Kluwer:Dordrecht 1991.

23. The Void Spectrum in Numerical Model Universes (A.L. Melott and G. Kauffmann) published in proceedings of the *Texas/ESO-CERN Symposium on Relativistic Astrophysics, Cosmology, and Fundamental Physics (Annals of the New York Academy of Sciences 647, 672 (1991); Barrow, Mestel, and Thomas, eds.)*

24. Nonlinear Gravitational Instability of Random Waves in the Expanding Universe (A.L. Melott and S.F. Shandarin) in *Nonlinear Random Waves and Turbulence in Nondispersive Media: Waves, Rays, Particles*, by S.N. Gurbatov, A.N. Malakov, and A.I. Saichev (Manchester: Manchester University Press) 1991.

25. Hot Dark Matter with No Strings Attached (A.L. Melott) in *Gamma Ray-Neutrino Cosmology and Planck Scale Physics* (D.B. Cline, editor) World Scientific, 1993.

26. Book Review of *Hyperspace* by M. Kaku, Kansas City Star, April 17, 1994.

27. Using the Zel'dovich Approximation to Understand the Structure in N-body Models of Dark Matter Dominated Universes, (A.L. Melott and J.L. Pauls), in *Sources of Dark Matter in the Universe* (D.B. Cline, editor) World Scientific, 1995.

28. Strategic Basic Research, a letter to the editor of *The Scientist*, May 30, 1994.

29. Zel'dovich and the Large-Scale Structure of the Universe, in *The Known and Unknown Zel'dovich*, (Nauka:Moscow), R.A. Sunyaev and S.S. Gershtein, ed. (1993).

30. B.S. Sathyaprakash, Varun Sahni, Dipak Munshi, Dima Pogosyan and A.L. Melott (1995) Comparison of nonlinear approximations to gravitational instability, in *Proceedings of the International workshop on Large Scale Structure in the Universe*, Potsdam, Germany, September 18-24 1994, Eds. J.P. Mucket, S. Gottlober and V. Muller (World Scientific Publishing).

31. Book review of *Pythagoras' Trousers* by Wertheim, in Technoscience, winter 1996.

32. *How We Happened: The Beginning of Everything*, a children's curriculum in cosmology. Self published.
33. *Cosmic Clips*, Astronomical Society of the Pacific, extensive footage of gravitational clustering video used. Also used in *Cosmic Journeys*, a NASA educational project.
34. J. R. Miller and A. L. Melott, *Integrating Mathematics and Science Education Using the Powers of Ten*, Technology and Teacher Education Annual, Proceedings of SITE 97, pp. 1250-1253, April 1997. This paper won the Best Paper award in the software development area at SITE 97, a national conference in the applications of advanced technology to education, held in Orlando, FL April 4- 7.
35. "Science-a Nature Religion?", *Voice* **5**, No.1, 4 (1999).
36. About half of " Superclusters of Galaxies Shed Light on Cosmic Architecture" in the *New York Times*, Jan. 26, 1999 p. D1 is devoted to discussion of our research on "superwinds" .
37. "Redshift Surveys and the Value of Ω ", H.A. Feldman and A.L. Melott, *Proceedings of the Cosmic Flows Workshop*, Victoria, Canada, July 1999, ed. S. Courteau, M. Strauss & J. Willick, ASP series
38. " What Happened to Science Education: Kansas and Beyond", *Physics and Society* (APS), **29**, 2 (April 2000).
39. "The Big Bang", in *A Kansan's Guide to Science* (P. Cartwright, R.L. Kaesler, B.S. Lieberman, and A.L. Melott) Kansas Geological Survey (2000).
40. " Randomized Thoughts of a Cultural Turncoat", in *After the Science Wars* (K. Ashman and P. Baringer, eds), Routledge Press, (2001).
41. "How We Threw the Bums Out", *Freethought Today*, 17(9), November 2000.
42. "Why Would ARN Distribute a Tape of a Debate Phillip Johnson Did Not Win?", *Reports of the National Center for Science Education*, **21**, 45 (2001).
43. "Fine-tuning and the Anthropic Principle: Cousins to Intelligent Design?" *LINK*, 1, #3, 3 (2001).
44. "Intelligent Design is Creationism in a Cheap Tuxedo", *Physics Today*, 55, #6, p. 48 (2002).
45. "Ya.B. Zel'dovich and large scale structure: the impact in the United States" , in *Zel'dovich: Reminisces* (R.A. Sunyaev, ed) CRC Publications (2004).
46. Book review of "Just Six Numbers" (M. Rees) and "The God Hypothesis" (M. Corey) in *Reports of the National Center for Science Education*, 24, #3/4, 53 (2004).
47. Comment on "Protecting Life in the Milky Way: Metals Keep the GRBs Away by Stanek et al. (astro-ph/0604440, not submitted to a journal) 2006.

48. 2003-2005 Extensive media coverage of the group's gamma-ray burst and mass extinction work on *Nature.com* <http://www.nature.com/news/2003/030922/full/030922-7.html>
New Scientist <http://www.newscientist.com/article.ns?id=dn4198>
An *Associated Press* release http://usatoday30.usatoday.com/news/science/2004-01-08-nova-gamma-death_x.htm and a separate *NASA* press release http://www.nasa.gov/centers/goddard/news/topstory/2005/gammaray_extinction.html

49. Fossil Biodiversity: Red plus signal, A.L. Melott and B.S. Lieberman (astro-ph/0606325, not submitted to a journal) 2006.

50. Work on biodiversity fluctuations, cosmic rays, and galactic dynamics: 2006 *New Scientist* article <http://www.newscientist.com/article/dn8923--life-waxes-and-wanes-with-bobbing-of-the-solar-system.html> extensive coverage on a *National Geographic* TV show <http://channel.nationalgeographic.com/channel/videos/extinctions/> (about 20 min into video)
Continued in 2007: *Space.com* http://www.space.com/scienceastronomy/070423_cosmic_evo.html , *National Geographic.com* <http://news.nationalgeographic.com/news/2007/04/070420-extinctions.html>
Supernovae effects, on *Space.com* <http://www.space.com/scienceastronomy/080108-eta-carinae.html>

51. Comment on 'Discreteness Effects in Simulations of Hot/Warm Dark Matter' by J. Wang & S.D.M. White. (arXiv:0709.0745, not submitted to a journal)

52. Comment on 'Discreteness Effects in Lambda Cold Dark Matter Simulations: A Wavelet-Statistical View' by Romeo et al. (arXiv:0804.0589v1, not submitted to a journal)

53. *Physics Today*, "Varying Cosmic-Ray Flux May Explain Cycles of Biodiversity" by B. Schwarzschild, October 2007, pp. 18-20.

54. A.L. Melott, "The Extinction Oscillator", *SEED* 22, 28-30 2009.

55. Book review, "Superstition" by Robert Park, *Reports of the National Center for Science Education* 30, 59 (2010)

56. Narrative of research "Cosmic Abodes of Life" *Discover Magazine* by Adam Frank, May 2009 issue, pp 49-50

57. 31 May 2010, *Science News*, account of the cometary impact analysis. http://www.sciencenews.org/view/generic/id/57790/title/Signs_of_giant_comet_impacts_found_in_cores See also the "Research Focus" article for the April 2010 issue of *Geology*. <http://geology.geoscienceworld.org/cgi/content/full/38/4/383>.
Astrobiology Magazine online news item on cosmic ray impact on biosphere <http://www.astrobio.net/exclusive/3227/death-rays-from-space>
Extended radio interview with Premier News Service (660 radio stations) on GRBs/extinctions

58. 13 July 2010, international media coverage on Nemesis paper, started by Wired Science http://www.wired.com/wiredscience/2010/07/nemesis-no-more/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+wired%2Findex+%28Wired%3A+Index+3+%28Top+Stories+2%29%29, UK's daily Telegraph, and MSNBC: http://www.msnbc.msn.com/id/38368075/ns/technology_and_science-space/ 28 news sites worldwide.

Nature Physics 7, 277 (2011) account "Written in the Stars"

http://www.nature.com/nphys/journal/v7/n4/full/nphys1974.html?WT.ec_id=NPHYS-201104

59. "The Earth Dies Screaming: Radiation Threats from Beyond" *Analog Science Fiction and Fact*, **132**(3), 25, March 2012.

60. 2012 coverage:

New Scientist, a British magazine, ran a small story related to our ideas on GRBs and mass extinctions. <http://www.newscientist.com/article/mg21328465.400-did-star-cluster-death-rays-zap-earth.html>

Forbes.com: <http://www.forbes.com/sites/brucedorminey/2012/10/16/decoding-a-great-earth-die-off-was-a-gamma-ray-burst-really-the-trigger/>

Nature News item associated with publication of short note:

<http://blogs.nature.com/news/2012/11/mysterious-radiation-spike-could-have-been-solar-super-storm.html>

61. 2013 coverage: *Nature*, January: "It Could Happen One Night", written by Nicola Jones. Three of the seven destructive phenomenae use primarily our research. *Nature* 493, 154–156 doi:10.1038/493154a

Astronomy Now (UK): "Altitude sickness", a 2-page article on the Medvedev-Melott galactic oscillation model.

Interviews with *BBC News* and *Neue Zürcher Zeitung* (Jan 18). See

<http://www.bbc.co.uk/news/science-environment-21082617> and

<http://www.space.com/19340-tree-ring-mystery-gamma-ray-burst.html>

April: Our paper in *GRL* was selected as a Research Highlight by the *American Geophysical Union*. Also, profiled in the online *Science* magazine news website:

<http://news.sciencemag.org/sciencenow/2013/03/scienceshot-solar-blast-suspecte.html?ref=hp>

Appeared in *Weather Channel* special "Gamma Ray Burst", part of a series of hourlong programs Forecasting the End. Series repeated with large audience share.

Interview with Japanese national public TV *NHK* and appearance in their hour-long TV special "Cosmic Front—the Mystery of 775 AD".

Major article "Solar Superflares—a new danger from the Sun" in the August 13 issue of *New Scientist* (UK). One of three researchers (US; Finland; Israel) interviewed for the article.

62. arXiv:1401.7276 Comment on: "Mysterious abrupt carbon-14 increase in coral contributed by a comet" Yi Liu et al.

63. "Could a giant sunburst unplug Earth?" *KC Star*, Feb 15, 2014

<http://www.kansascity.com/2014/02/15/4826370/could-a-giant-sunburst-unplug.html>

64. arXiv:1406.5141 Comment on: 'Observation of 23 Supernovae that exploded <300 pc from Earth during the past 300 kyr' by R.B. Firestone (authors: A.L. Melott, I. Usoskin, G. Kovaltsov, C. Laird)

65. "Dennis Sciama and The Theory of Everything" *APS News* 24 (2), 2015 (A.L. Melott)

66. Views: 'The Theory of Everything' is missing something. *Astronomy & Geophysics* 2015 56 (2): 2.9-c-2.9. doi: 10.1093/astrogeo/atv057 (A.L. Melott)

67. Comment on 'Investigations into the impact of astronomical phenomena on the terrestrial biosphere and climate' (arXiv:1505.07856 [astro-ph.EP]) by Fabo Feng (A.L. Melott) arXiv:1506.01626 [astro-ph.EP]

68. "How supernovae have affected life", *Astronomy* 46 (4), 44 (April, 2018).

Invited Talks (I present about ten external department colloquia, five major public lectures, and attend a number of scientific meetings per year, which are not listed unless an invited talk or other major contribution is made).

1. "Formation of Galaxies and Superclusters in a Universe Dominated by Collisionless Elementary Particles", at Early Universe Conference, Rutherford Appleton Laboratory, Abingdon, England, March 21, 1985.

2. "The Computer in Astrophysics: Will the Real Universe Please Stand Up?", American Physical Society meeting Crystal City, VA, April 24, 1985.

3. "Dark Matter in the Universe: Can We Relate Initial Conditions to Present Observations?", Fourth Marcel Grossman Meeting on Recent Developments in General Relativity, Rome, Italy, June 17, 1985.

4. "Bubbles or Sponges: What is the Topology of the Universe?" Keynote lecture at Mid-America Regional Astrophysics Conference, Kansas City, Mo., April 10, 1987.

5. "The Topology of the Universe", Astrophysics Division, American Physical Society, Washington, D.C., April 22, 1987. Probably the first time an audience of physicists wore 3D glasses.

6. "Topology of the Universe", American Mathematical Society, 845th meeting, Lawrence, Kansas, Oct. 18, 1988.

7. "Gravitational Instability with High Resolution", to Dutch Royal Academy of Sciences, Aug. 15, 1989.

8. Chair, session on Galaxy Clustering, workshop on "Statistical Techniques in Astronomy", Pennsylvania State University, August 10, 1991.

9. "Structure Formation in a Universe Dominated by Massive Neutrinos", Second UCLA Conference on Gamma Ray and Neutrino Cosmology, February 15, 1992.

10. "Does Large-Scale Structure Demand Exotic Initial Conditions?", conference on Assessment of Dark Matter in the Universe, UCLA, February 16, 1994.
11. "Dynamics of Large-Scale Structure in the Universe", American Astronomical Society, Pittsburgh, June 13, 1995.
12. "Discreteness and Collision Error: the N-Body Skeleton in the Closet", New England Section of the American Physical Society, Bangor, Maine, April 12, 1997.
13. Session Chair, "Relativistic Astrophysics", American Astronomical Society, Washington, D.C., January 8, 1998.
14. "The Bull's-Eye Effect as a Probe of Ω_0 ", American Physical Society, Columbus, Ohio, April 17, 1998.
15. "The Bull's-Eye Effect as a Probe of Ω_0 ", American Association of Physics Teachers, Lincoln, Nebraska, August 6, 1998.
16. "What Happened to Science Education: Kansas and Beyond", American Association for the Advancement of Science, San Francisco, February 15, 2001.
17. "Nbody simulations: the Skeleton in the Closet", NASA/Fermilab Workshop on Structure Formation and Dark Matter Halos, May 11, 2001.
18. "Nbody simulations: the Skeleton in the Closet", Santa Fe Workshop on Structure Formation and Dark Matter: Theory vs. Observations, July 17, 2001.
19. American Physical Society, Albuquerque, NM, April 22, 2002, Joseph Burton Forum Award speaker.
20. Cosmo-02, Chicago, September 19, 2002 "Cluster correlations with large-scale structure"
21. American Institute of Physics, March 27, 2003, presentation to Assembly of Member Society Officers "Motivating effective political participation of scientists in local policy issues".
22. Astrobiology Science Conference, NASA-Ames, March 29, 2004, "Did a gamma-ray burst initiate the late Ordovician extinction?"
23. Exobiology PI Symposium, NASA-Ames, August 17, 2005 "Do gamma-ray bursts damage planetary biospheres?"
24. Astrobiology Science Conference, Washington DC, March 29, 2006 "Astrophysical radiation sources and terrestrial biodiversity", sponsored by NASA.
25. American Astronomical Society, "Atmospheric damage from ionizing radiation", May 28, 2007, Honolulu.
26. Bioastronomy 2007, "Consequences of astrophysical ionizing radiation events for terrestrial planets", July 20, 2007, San Juan, Puerto Rico.

27. American Quaternary Association Biennial Meeting, August 15, 2010, Laramie, WY. "Cometary Impacts and Atmospheric Chemistry"

28. Smithsonian Institution conference "Life in the Cosmos", two invited talks, Washington, D.C. Sept 26-27, 2012. "Periodicity in Terrestrial Biodiversity" and "Zapping Charlemagne's Power Grid—a Solar Superflare?"

29. American Physical Society, April 2013 meeting, in Denver "Intermittent Astrophysical Radiation Sources and Terrestrial Life"

30. Kansas State University, annual endowed Peterson Lecture, April 1, 2014: "Death from the Skies: Astrophysical Threats to Life on Earth"

31. Extreme Space Weather, Boulder, CO June 10, 2014. Invited talk "Missing the trees for the forest: Time resolution and the nitrate signal in ice cores"

32. Astrobiology Science Conference, April 24-28, 2015. Co-proposer and co-organizer, Session chair, and talk presented "Ionizing Radiation Episodes and the Evolution of Complex Life"

33. Astrobiology Science Conference, April 24-27, 2017. Proposer and co-organizer, session "Ionizing Radiation as a Constraint on Habitability". Talk presented "Cosmic Explosions, Molecular Clocks, and Terrestrial Fires"

Graduate Students Supervised

Ph.D (chair)

Randall Splinter (Ph.D. 1995) (Hewlett-Packard Corporation)

Jennifer Pauls (Ph.D. with honors 1997) (Chandler-Gilbert College)

Brian Thomas (PhD. with honors 2005) (Washburn University)

Dimitra Atri (Outstanding Masters award, 2010; Ph.D. 2011) (Blue Marble Institute of Science)

Drew Overholt (Outstanding Masters award, 2011; Ph.D. with honors 2013) (MidAmerica Nazarene University)

Ph.D (committee member)

Michael Holmes (Physics) 1988

Joseph Giacalone (Physics) 1991

Joseph Van Zandt (Philosophy) 1993

Naser Alinejad (Physics) 1995

Capp Yess (Physics) 1997

Terry Sader (Philosophy) 2000

Nurur Rahman (Physics) 2001

Will Chambers (Physics) 2002

Majeed Amini (Chemistry) 2006

Alan Eastlund (Physics) 2015

M.S. Laura Jiang 1987
David Willmes 1989
Charles Buck 1997

Undergraduate Research Assistants (most with refereed papers)

John Beacom B.S. 1991, (NSF Graduate Fellow; the first D.N. Schramm Postdoctoral Fellow at Fermilab; Ohio State Prof., physics)
Kurt Dominik B.S. 1992
Todd Pellman B.S. 1994 (Goldwater nominee)
Kathy McDavitt B.S. 1995
Jeremy Tinker B.S. 1996 (Ph.D. 2004 Ohio State; Research Associate at U Chicago)
Angie Linn B.S. 1997 (Goldwater Scholar 1995-97; Ph.D. Ohio State)
Bryce Kuhlman B.S. 1996 (Goldwater Scholar)
Brian Wilhite B.S. 1998 (Goldwater nominee, McCormick Graduate Fellow, Ph.D. Chicago 2004; postdoc at Illinois; Asst. Prof, Elmhurst College)
Michael Kaufman B.S. 2000 (currently Wisconsin grad student, plasma physics)
Stephen Floor B.S. 2005; Goldwater scholar (currently postdoc at UC Berkeley, biophysics)
Hannah Swift (2003; University Scholar, Goldwater Scholar; currently at UC Berkeley)
Daniel Hogan (2003-2005; Chancellor's Club Scholar; Goldwater Scholar; Rhodes and Marshall Scholarship nominee; B.S. 2008)
Luis Vargas (co-supervisor 2003; Goldwater Scholar; APS Minority Fellow; B.S. 2008)
Larissa Ejzak (B.A. physics and theatre 2006; graduate student with Fellowship, physics, Wisconsin)
Lori Natarajan (B.S. Astronomy and Physics 2007)
Alex Krejci (College Dean's Scholars Program; Finalist, Vanderbilt Prize for Undergraduate Research in Physics and Astronomy; B.S. Physics 2009)
Gregory Pach (2011-2013)

KU Committee Service—outside department

1. Faculty search committee, Computer Science, 1987
2. Graduate School Summer Fellowship Committee, 1991-1992
3. College of Liberal Arts and Sciences, Sabbatical Leave Committee, 1992-1995
4. DOE EPSCoR State committee, 1993-1994
5. History and Philosophy of Science Program Committee, 1987-1995

- 6, Ad hoc faculty committee on introductory science courses 1997-1998
7. Ad hoc committee for KU Internet 2 proposal, 1998
8. Faculty Senate Research Committee, 1997-1998
9. KU Supercomputer Allocation Committee, 1998
10. KU Speakers Bureau, 2003-present (first speaker to be utilized as program began)
11. College of Liberal Arts and Sciences, Promotion and Tenure Committee, 2002-2005
12. Convener of Astrobiology Working Group, an interdisciplinary research committee, 2003-present.
13. Organizing committee, conference "The Shape of Things to Come", for 2010.
14. Advisory board member, James Gunn's Ad Astra SF Journal (2012--

Professional Service and Outreach

I do not list my numerous public talks in high schools, churches, community colleges, etc. These number about 6-8 in an average year. I am a member of the KU Speakers Bureau.

1985

National Science Foundation, Office of Advanced Scientific Computing, Review Committee for Purdue University supercomputer center, 1985.

1986-87

Referee, Astrophysical Journal Letters and Astrophysical Journal
 Consultant to Adler Planetarium, Chicago, design of ceiling display on large-scale structure of the Universe

Faculty promotion and tenure referee, University of New Mexico

Interviews, German and Italian public radio

Provided poster illustration for XIIIth Texas Symposium on Relativistic Astrophysics

1987-88

Referee, Astrophysical Journal letters, Astrophysical Journal, Reviews of Modern Physics, Publications of the Astronomical Society of Japan, Astronomy & Astrophysics

1988-89

Referee, Astrophysical Journal, Physical Review Letters, Astronomy & Astrophysics

Referee, National Science Foundation, for funding proposals

Provided illustrations for "From Quarks to the Cosmos:" (Lederman & Schramm)

1989-90

Reviewer of proposals, National Science Foundation
Referee, Astrophysical Journal, ApJ Letters, Astronomy & Astrophysics, Physical
Review Letters, Monthly Notices of the Royal Astronomical Society

1990-91

Reviewer of funding proposals, National Science Foundation and Department of Energy
Provided simulation pictures for German magazine Geo, and for Pasachoff Astronomy
Text.
Referee, Astrophysical Journal, ApJ Letters, Astronomy & Astrophysics, Physical
Review D., Phys Rev. Letters
Numerous recommendation letters for persons seeking faculty positions

1991-92

Began service on UVMOWG, a NASA advisory committee, which continues through '94.
Reviewer of funding proposals for Government of Spain, National Science Foundation,
Department of Energy
Referee Astrophysical Journal, ApJ Letters, Astronomy & Astrophysics, Physical
Review D., Phys Rev. Letters
Provided illustrations for Sky & Telescope, Encounters
Extensive interview for Chronicle of Higher Education
Authored the first video to be published as a supplement to a scientific journal (ApJ)

1992-93

Reviewer for the continued publication of Soviet Astronomy Letters, a translation
journal.
Referee, Astrophysical Journal, ApJ Letters, Publications of the Astronomical Society of
the Pacific, Astronomy & Astrophysics
UVMOWG membership continues
Referee for NSF Presidential Young Investigator Award
Referee for Miller Fellowship (UC Berkeley)

1993-94

Reviewer of funding proposals for Canadian Research Council, NASA Astrophysics
Theory Program, NATO postdoctoral fellowships,
Interviews with German, Italian public TV and with The Economist
Letters on science funding published in AAS News and The Scientist;
Referee, Astrophysical Journal, ApJ Letters, Physics Reports, Astronomy &
Astrophysics, Brook/Cole Publishing
UVMOWG membership continues

1994-95

Video supplied for BBC television program on cosmology
Referee, Astrophysical Journal, ApJ Letters, Physical Review Letters, Astronomy &
Astrophysics
Reviewer for NASA (Gravity panel), National Science Foundation, Government of
Germany
Referee for Endowed Professorship, University of Munich

Promotion and tenure referee, Inter-University Center for Astronomy and Astrophysics,
Pune, India
Referee, Germany-Japan scientific exchange grant

1995-96

Tenure referee, Ohio State University
Internal funding referee, University of Nevada, Las Vegas
Referee, Physics of Fluids, Astrophysical Journal, ApJ Letters, Physical Review Letters,
Phys. Rev. D., Astronomy & Astrophysics
Review for funding proposals, National Science Foundation
Conducted lecture series at Kansas City Art Institute

1996-97

Supplied video for Japanese television program "The Birth of the Universe" and for
Display in Tokyo museum "20th Century Matrix"
Referee, Astrophysical Journal, ApJ Letters, Physical Review D, Phys. Rev. Letters,
Monthly Notices of the Royal Astronomical Society
Organizing committee, Tokyo Meeting on Computational Physics

1997-98

Successfully nominated Jack Burns, Research Vice President of University of Missouri
for APS Fellowship
Referee, Astrophysical Journal, ApJ Letters, Physical Review D, Phys. Rev. Letters,
Science, Reports of the National Center for Science Education
Funding review, National Science Foundation
Promotion referee, Ohio State University, IUCAA (India), University of Madrid,
McDonnell Fellowship (Ohio State)

1998-99

Major effort related to Kansas state public school science standards, which culminated
in the formation of Kansas Citizens for Science, and had a major impact on the
repudiation of these standards by the voters. (Later to be lost when everyone
went to sleep after the 2000 victory...)
Successfully nominated David Weinberg, Ohio State University, for APS Fellowship.
Software reviewer, National Center for Science Education
Promotion and tenure referee, University of Nevada at Las Vegas, and Iowa State
University
Referee, Astrophysical Journal, Physical Review Letters, Monthly Notices of the Royal
Astronomical Society

1999-2000

Referee, Physical Review Letters, Phys. Rev. E., Monthly Notices of the Royal
Astronomical Society
Founding Board Member, Kansas Citizens for Science (monthly board meetings) 1999-
2003
Two additional successful nominations for APS Fellowship
About 25 letters to the editor published in Kansas newspapers, on science standards

About 14 public talks on KS science standards in churches, universities, museums

2000-2001

Referee, Physical Review E, Science

Guest on one-hour call-in talk show on NPR station KERA in Dallas, opposite Intelligent Design "theorist" William Dembski

Funding reviews for NSF, including Career proposal, for National Research Council Of Canada, and US-Israel Binational Science Foundation

Promotion referee, University of Maine

KCFS Board

2001-2002

Referee, Astrophysical Journal Letters, Physical Review Letters, Phys. Rev. D.,

Funding reviews, Israel National Science Foundation, Department of Energy, National Science Foundation

KCFS Board

2002-2003

Referee, Publications of the [US] National Academy of Sciences, Europhysics Letters, Astrophysical Journal Letters, Physical Review E, Rutgers University Press, Physical Review E

Consultant to League of Women Voters of formulating science policy questions for state board of education candidates

Funding reviews, Ohio Supercomputer Center, National Science Foundation

Referee, Vanderbilt University Physics Chair search committee

KCFS Board

2003-2004

Change to totally new research area; KU rapidly rises to a noticeable presence in the confluence of astrophysics and paleobiology.

Referee: Astrophysical Journal Letters, Physical Review E

Successfully nominated L. Krauss of Case Western for APS Burton Forum Award

Funding reviews, National Science Foundation

2004-2005

Referee, Physical Review D, Phys. Rev. Letters, Astrophysical Journal Letters,

Funding reviews, NASA (LTSA/ADP), National Science Foundation

Another successful nomination for APS Fellowship.

Debate judge, Kansas statewide competition at Free State High School

2005-2006

Radio interview, Our Ocean World

Filming of segments for National Geographic TV special "Extinctions"

Another successful nomination for APS Fellowship

Assist Larissa Ejzak in planning for her play "Burst" presented as KU Theatre honors project

2006-2007

Successfully nominated Barbara Ryden (Ohio State) for the Chambliss Writing Award of the American Astronomical Society for her text "Introduction to Cosmology"
Major interview for CBC radio science series "Quirks and Quarks"
Funding reviews, NASA, NSF, France-Israel Binational Science Foundation, textbook proposals (Cambridge University Press, Elsevier, Columbia University Press)
Press releases coordinated on (separate) research projects by American Physical Society and American Geophysical Union

2007-2008

Referee for National Science Foundation

Major interview for 3-page article on our research in *Physics Today* October 2007:

<http://scitation.aip.org/content/aip/magazine/physicstoday/article/60/10/10.1063/1.2800087>

Session organizer, Astrobiology Science Conference 2008

Reviewer, *Research Letters in Physics*, Quaternary Research

Elected to Executive Committee of American Physical Society Astrophysics Division

Poster judge, Astrobiology Science Conference

Consultant to *New Scientist* on large-scale structure news story

Consultant to Animal Planet TV channel on planning for series on extinction events

2008-2009

Speaker at *Time Frame*, a multidisciplinary panel on time, Spencer Museum of Art, University of Kansas, October 2008.

Invited speaker, Quadrennial Congress of *Sigma Pi Sigma* (Physics students honorary), *Scientific Citizenship: Connecting Physics and Society*, Fermilab, 11/06—11/08.

Referee, *Astrophysical Journal* and *Letters*, *Int'l. J. of Biometeorology*

Op-Ed on climate change, print newspaper.

Executive Committee of American Physical Society Astrophysics Division

2009-2010

Referee, promotion to full professor, private research university.

Invited speaker, *American Quaternary Association Biennial Meeting*

Invited speaker, University of Kansas *Science Fiction Writers Workshop*

Paper chosen for Research Focus, April issue of *Geology*

Journal Referee: *Icarus*

Advances in Space Research

Evolution: Education and Outreach

2010-2011

Referee: *International Journal of Astrobiology*

Monthly Notices of the Royal Astronomical Society

Science (journal)

National Science Foundation

Presenter, *Center for Study of Science Fiction*, Writers Workshop

Panelist, "Public Intellectuals", KU speaker series.

External referee, promotion to Full Professor

Development of Multidisciplinary physics Ph.D. plan, implemented by Dept.

2011-2012

Referee: *Origins of Life and Evolution of the Biosphere*
Journal of Biogeography
Proceedings of the National Academy of Sciences
Scientific Reports (Nature group)
Physics Today

2012-2013

Reviews provided for:

Monthly Notices of the Royal Astronomical Society

Astrophysical Journal Letters

International Journal of Astrobiology

Galaxies

Monthly Notices of the Royal Astronomical Society Letters

Graduate Recruiter

Composed successful department proposal for graduate fellowships

Consulting Board, *James Gunn's Ad Astra*

2013-2014

Consulting Board, *James Gunn's Ad Astra*

Nominated one of the recipients of the *2014 Gruber Prize in Cosmology*

Annual *Peterson Lecture*, Kansas State University

Reviews provided for:

Wiley Interdisciplinary Reviews—Climate Change

Life Monthly Notices of the Royal Astronomical Society

Europhysics Letters

Springer Legacy Series, Berlin, for refereed book

Scientific Reports (Nature group)

International Journal of Astrobiology

Challenges in Astrobiology

Journal of Atmospheric and Solar-Terrestrial Physics

2014-2015

Consulting Board, *James Gunn's Ad Astra*

Organizing Committee, 3 special sessions at Abscicon 2015

Reviews provided for:

Frontiers in Life Science

Advances in Space Research

Physical Review Letters

European Research Council

Springer Legacy Series, Berlin, for refereed book

Scientific Reports (Nature group)

International Journal of Astrobiology

Challenges in Astrobiology

Journal of Atmospheric and Solar-Terrestrial Physics

Frontiers in Life Science

Advances in Space Research

Physical Review Letters

European Research Council

Sun & Geosphere

Monthly Notices of the Royal Astronomical Society

NIMB Proceedings

Science

Astrophysical Journal Letters

2015-2016

Consulting Board, *James Gunn's Ad Astra*

Reviews provided for:

Astrophysical Journal

Proceedings of the National Academy of Sciences

International Journal of Astrobiology

Astrophysical Journal

Journal of Geophysical Research—Atmospheric Physics

Journal of Atmospheric and Solar-Terrestrial Physics

Physical Review Letters

Journal of Environmental Radioactivity

Nature

Advances in Space Research

Physics Letters A

I was highlighted in a radio/internet presentation which can be heard at

<http://wvpublic.org/post/moundsville-native-pioneering-astrobiophysicist> ; I and 3 other leaders in science and business are featured in the radio documentary Inspiring West Virginians, airing Monday, Dec. 29 and Jan. 2, at 8PM (EST) on West Virginia Public Radio.

Extensively interviewed for NBC News item on impacts:

<http://www.nbcnews.com/science/space/death-star-coming-us-study-says-its-possible-dont-panic-n277741>

KU press release July 20 based on Overholt et al. paper. Extensive international coverage, e.g. <http://www.dailymail.co.uk/sciencetech/article-3168594/Can-sun-cause-birth-defects-Earth-Study-finds-strange-link-cosmic-rays-mutant-cell-changes-humans.html>

In Daily Mail (UK). Leading item in *Inside KU* publication.

KU press release December 1 based on "Clocks" paper.

<http://news.ku.edu/2015/11/18/factoring-cosmic-radiation-could-help-set-more-accurate-molecular-clock>

External Conference/Organizing

1. Organizer, international workshop on Topology of the Large Scale Structure of the Universe, Lawrence, Kansas, April 26-29, 1988. Proceedings published by PASP.

2. Organizer, workshop on "The Legacy of Ya.B. Zel'dovich for Astrophysics and Cosmology", Lawrence, Kansas, May 2-6 1990. The only joint workshop organized between the US-NSF and the Soviet Academy of Sciences under their working agreement.

5. Member, Management Operations Working Group, NASA Astronomy/Relativity Branch, 1991-94.

6. Primary organizer, workshop on "Gravitational Clustering in Cosmology", Aspen Center for Physics, Colorado June 6-26, 1994.
7. Organizer, AAS Topical Session, Pittsburgh meeting, "The Dynamics of Large Scale Structure" (June 1995).
8. Primary organizer, workshop and conference "Dynamics and Statistics of Large-Scale Structure in the Universe", Lawrence, Kansas May 8-12, 1997.
9. Co-Organizer, Great Plains Cosmology Workshop, Lawrence, Kansas May 23, 1998.
10. Founding member and Board member, Kansas Citizens for Science, 1999-2003.
11. Organizer, Science Activists' Summit, Kansas City, a national meeting sponsored by Kansas Citizens for Science and the National Center for Science Education. March 30 through April 1, 2001.
12. Organizer, topical session for June 2001 AAS Meeting (Pasadena), "Cluster Properties and Large-Scale Structure"
13. Organizer, invited topical session and 3-day interdisciplinary splinter workshop "Astrophysical Radiation Sources and Their Impact on Life" held in conjunction with the American Astronomical Society meeting, May 29-31, 2007, Honolulu.
14. Organizer, "Biodiversity fluctuations in space and time", topical session for ABSCICON 08, held in Santa Clara, CA, April 15-17, 2008. Two of the talks in this session were identified as highlights of the conference in a review by Astrobiology Magazine.
15. Organized invited and contributed talks for two sessions at April 2013 APS meeting, entitled "Geophysical Astronomy" and "Energetic Neighbors". Two contributors invited for press conference by APS.
16. Co-organizer, multiple sessions at ABSCICON 15, held in Chicago, IL June 2015.